

# NASA TECH BRIEF



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## High-Temperature Electric Stator

A high-temperature stator (1300°F hot spot) can withstand severe environmental conditions, including temperature extremes, imposed by space missions. Designed and constructed to operate at temperatures considerably above those of conventional electrical equipment, the unit is an example of a growing technology which is producing a variety of electrical machinery capable of operation in severe environments, both in space and in industry.

The stator was tested, without a rotor, at temperatures of 1300°F for 10,000 hours in a vacuum of  $3 \times 10^{-9}$  Torr. During the test procedure, the unit was energized at 500 V phase-to-phase with 400 Hz power. Its electrical characteristics remained satisfactory throughout the tests; the insulation improved slightly, and the conductor resistance remained constant.

The assembly included a bore seal for hermetically sealing the stator from the rotor cavity. In actual use, the bore seal will serve to prevent the stator materials from being attacked by vapors from the alkali-metal-lubricated rotor bearings.

### Notes:

1. The following documentation is available from:  
National Technical Information Service  
Springfield, Virginia 22151  
Single document price \$3.00  
(or microfiche \$0.65)

### Reference:

NASA CR-1592 (N70-35822), Thermal-Vacuum Testing of High-Temperature Electrical Components

2. Technical questions may be directed to:  
Technology Utilization Officer  
Lewis Research Center  
21000 Brookpark Road  
Cleveland, Ohio 44135  
Reference: B70-10459

### Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act [42 U.S.C. 2457(f)] to Westinghouse Electric Corp., Beulah Road, Pittsburgh, Pennsylvania 15235.

Source: P. Kueser of  
Westinghouse Electric Corp.  
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Category 01